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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/545,691	04/07/2000	Barrie Gilbert	1482-132	2100

7590 12/12/2003

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EXAMINER	
SOBUTKA, PHILIP	

ART UNIT	PAPER NUMBER
2684	20

DATE MAILED: 12/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/545,691	GILBERT, BARRIE	
	Examiner	Art Unit	
	Philip J. Sobutka	2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 September 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,3,9,10,13 and 15-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2,3,9,10,13 and 16-26* is/are allowed.

6)☒ Claim(s) *15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voinigescu et al (US 5,789,799) in view of Mitzlaff (US 5,307,512).

Consider claim 15. Voinigescu teaches an amplifier cell comprising first and second input terminals (Voinigescu, fig 9, RF & LO), first and second output terminals (Voinigescu, fig 9, IF), first input stage coupled to the first and second output terminals (Voinigescu, fig 9, Q1, Q2) and arranged to drive the first and second output terminals responsive to a first input signal received at the first input terminal; and a second input stage coupled to the first and second output terminals and arranged to drive the first and second output terminals responsive to a second input signals received at the second input terminal (Voinigescu, fig 9, Q3,Q6). Voinigescu lacks a teaching of the amplifier stages being class AB. Mitzlaff teaches that class AB operation has higher efficiency when constant envelope modulation schemes such as FM are employed (col 2, lines 62-65). It would have been obvious to one of ordinary skill in the art to modify Voinigescu to use AB stages for higher efficiency when in FM operation.

Allowable Subject Matter

3. Claims 2,3,9,10,13, and 16-26 are allowed.

Consider claim 2. The nearest prior art as shown in Voinigescu and Mitzlaff fails to teach an RF mixer comprising a mixer core having a LO input port, an IF output port and an input with an RF input section providing a current signal responsive to an RF input; wherein the RF input section includes: a transistor coupled to the input, and a inductor coupled to the transistor to extend the dynamic range of the mixer; wherein the transistor includes a first terminal coupled to the input, a second terminal coupled to receive a reference signal, and a third terminal; and the inductor includes a first terminal coupled to the third terminal of the transistor and a second terminal coupled to receive the RF input.

Consider claim 9. The nearest prior art as shown in Voinigescu and Mitzlaff fails to teach an RF mixer comprising: a mixer core having a first input terminal for receiving a first current signal and a second input terminal for receiving a second current signal; a first sub cell coupled to the first input providing the first current signal responsive to an RF input signal and having a first transistor and a first indictor coupled to the first transistor to extend the dynamic range of the mixer; and a second sub cell coupled to the second input terminal of the mixer core to provide a second current signal to the mixer core responsive to an RF input signal, the second sub cell having a second transistor to extend the dynamic range of the mixer; wherein the first transistor includes a first terminal coupled to the first input terminal, a second terminal coupled to receive a reference signal and a third terminal; and the inductor includes a first terminal coupled to the third terminal of the transistor and a second terminal coupled to receive the RF input signal.

Consider claim 13. The nearest prior art as shown in Voinigescu and Mitzlaff fails to teach a current mirror comprising: a first transistor having a first terminal and a second terminal coupled together to cause the first transistor to operate a s diode, and a third terminal coupled to a common node; a first indictor coupled between and input and the first terminal of the first transistor to reduce noise; a second transistor having a first terminal for transmitting an output signal, a second terminal coupled to the input terminal, and a third terminal; and a second inductor coupled between the third terminal of the second transistor and common node to reduce the noise.

Consider claim 16. The nearest prior art as shown in Voinigescu and Mitzlaff fails to teach the amplifier of claim 15 wherein the first AB input stage comprises a first transistor having a first terminal coupled to the first output terminal, a second terminal to receive a bias signal and a third terminal to receive the first input signal, and a first current mirror coupled between the first input terminal and the second output terminal.

Consider claim 22. The nearest prior art as shown in Voinigescu and Mitzlaff fails to teach the amplifier cell of claim 15 wherein each of the AB stages comprises: a common base transistor coupled between a first one of the input terminals; an inductor coupled between the common base transistor and a first one of the output terminals; and a inductively degenerated current mirror coupled between the first one of the input terminals and the other output terminal.

Consider claim 23. The nearest prior art as shown in Voinigescu and Mitzlaff fails to teach an RF input section for a mixer comprising: a first output terminal for a first current to a mixer; a second output terminal for a second current to the mixer; a first

transistor having a first terminal coupled to the first output terminal, a second terminal coupled to receive a bias signal, and a third terminal coupled to a first RF input terminal for receiving a first RF input signal; a first diode coupled between the first RF input terminal and a common node; a second transistor having a first terminal coupled to the second output terminal, a second terminal coupled to form a current mirror with the first diode, and a third terminal coupled to the common node.

Response to Arguments

4. Applicant's arguments filed 8-14-02 have been fully considered but they are not persuasive.

Note that while the previous action contained a typographical error in that only one side of the mixer arrangement was mentioned, clearly the arrangement requires Q3 and Q6 to be coupled to the LO, and Q1 and Q2 to be coupled to the RF input. Note that the mixer arrangement as a whole was being cited; as the applicant appeared to realize when he presumed that the cited output included both IF+ and IF-, on page 3, in the last paragraph of applicant's brief.

In response to applicants argument's note that while the RF input (Q1, Q2) is not directly coupled to the output terminals, clearly the RF input is driving the output of a mixer arrangement which mixes RF and LO to produce the IF. That is, the RF drives the input stage, which includes Q1 and Q2, while the LO drives the mixer stage, the input and mixer core together produce the two IF outputs at IF+ and IF-.

As to applicant's arguments regarding Voinigescu, note that while Voinigescu may indicate other arrangements for FM operation, clearly Voinigescu teaches the

advantage being produced by AB operation, which is the teaching relied upon in the rejection.

Conclusion

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip J. Sobutka whose telephone number is 703-305-4825. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 703-308-7745. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

Philip Sobutka

Pjs
October 9, 2003

TILAHUN GESESSE
PATENT EXAMINER